

Claims:

1. An isolated polynucleotide comprising,
a human Tbx20 polynucleotide sequence set forth in SEQ ID NO 1, or a complement thereto.
- 5 2. An isolated polynucleotide which codes without interruption for a human Tbx20 amino acid sequence of claim 1 as set forth in SEQ ID NO 1, or a complement thereto.
3. An isolated polynucleotide comprising,
10 a human Tbx20 polynucleotide sequence having 99% or more sequence identity to the polynucleotide sequence set forth in SEQ ID NO 1 and which codes without interruption for Tbx20, or a complement thereto, and which has a transcription regulatory activity.
- 15 4. An isolated polynucleotide which is specific for human Tbx20 of claim 1 and which codes for a polypeptide, said polypeptide comprising amino acid 319, 326, 332, 333, and/or 364 as set forth in SEQ ID NO 2.
5. An isolated polynucleotide of claim 4 coding for a polypeptide comprising amino acids
20 298-447 as set forth in SEQ ID NO 1.
6. An isolated polynucleotide of claim 4, wherein said fragment is effective in a polymerase chain reaction.
- 25 7. An isolated polypeptide of claim 1 comprising,
the human Tbx20 amino acid sequence set forth in SEQ ID NO 2.
8. An isolated polypeptide,
selected from the amino acid sequence of 298-447 and which is specific for human
30 TBx20 of claim 7.

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9. An isolated polypeptide comprising a human Tbx20 amino acid sequence having 99% or more sequence identity to the amino acid sequence set forth in SEQ ID NO 1, and which has transcription regulatory activity.

- 5 10. A method of treating a disease of heart showing altered expression of Tbx20 of claim 1, comprising:

administering to a subject in need thereof a therapeutic agent which is effective for regulating expression of said Tbx20.

- 10 11. A method of claim 10, wherein said agent is an antibody or an antisense which is effective to inhibit translation of said gene.

12. A method of detecting human Tbx20 of claim 1 in a sample, comprising:

15 contacting a sample comprising nucleic acid or polypeptides with a polynucleotide which is specific for human Tbx20 polynucleotide, or a binding partner which is specific for human Tbx20 polypeptide under conditions effective for said polynucleotide or binding partner to bind to said Tbx20, and

determining whether polynucleotide or binding partner binds to said Tbx20.

- 20 13. A method of claim 12, wherein said determining is detecting is performed by:

Northern blot analysis, polymerase chain reaction (PCR), reverse transcriptase PCR, RACE PCR, or *in situ* hybridization, and

25 using a polynucleotide probe having a sequence selected from SEQ ID NO 1, a polynucleotide having 99% sequence identity or more to a sequence set forth in SEQ ID NO 1, effective specific fragments thereof, or complements thereto.

14. A method for identifying an agent that modulates the expression of Tbx20 of claim 1 in heart cells, cells derived from heart, or heart progenitor cells, comprising,

30 contacting a cell population comprising said cells with a test agent under conditions effective for said test agent to modulate the expression of Tbx20 in said cells, and determining whether said test agent modulates said Tbx20.

15. A method of claim 16, wherein said agent is an antisense polynucleotide to a target polynucleotide sequence selected from SEQ ID NO 1 and which is effective to inhibit translation of said Tbx20.

5 16. A method of detecting polymorphisms in Tbx20 of claim 1 comprising:
comparing the structure of : genomic DNA comprising all or part of Tbx20,
mRNA comprising all or part of Tbx20, cDNA comprising all or part of Tbx20, or a
polypeptide comprising all or part of Tbx20, with the structure of Tbx20 set forth in SEQ
ID NO 1.

10 17. A method of claim 16, wherein said polymorphism is a nucleotide deletion,
substitution, inversion, or transposition.

15 18. A mammalian cell whose genome comprises a recombinant Tbx20 of claim 1 operatively
linked to an expression control sequence effective to express said gene in heart cells, cells
derived from heart, or heart progenitor cells.

20 19. A method of advertising Tbx20 of claim 1 for sale, commercial use, or licensing,
comprising,
displaying in a computer-readable medium a polynucleotide set forth in SEQ ID NO
1, effective specific fragments thereof, or complements thereto.

25 20. An antibody which is specific for an epitope of human Tbx20 of claim 1 selected from
the amino acids 310-447.

30 21. A method of selecting human Tbx20 from a database comprising polynucleotide
sequences, comprising
displaying, in a computer-readable medium, a polynucleotide sequence or polypeptide
sequence for human Tbx20 of claim 1, or complements to the polynucleotides sequence,
wherein said displayed sequences have been retrieved from said database upon
selection by a user.

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